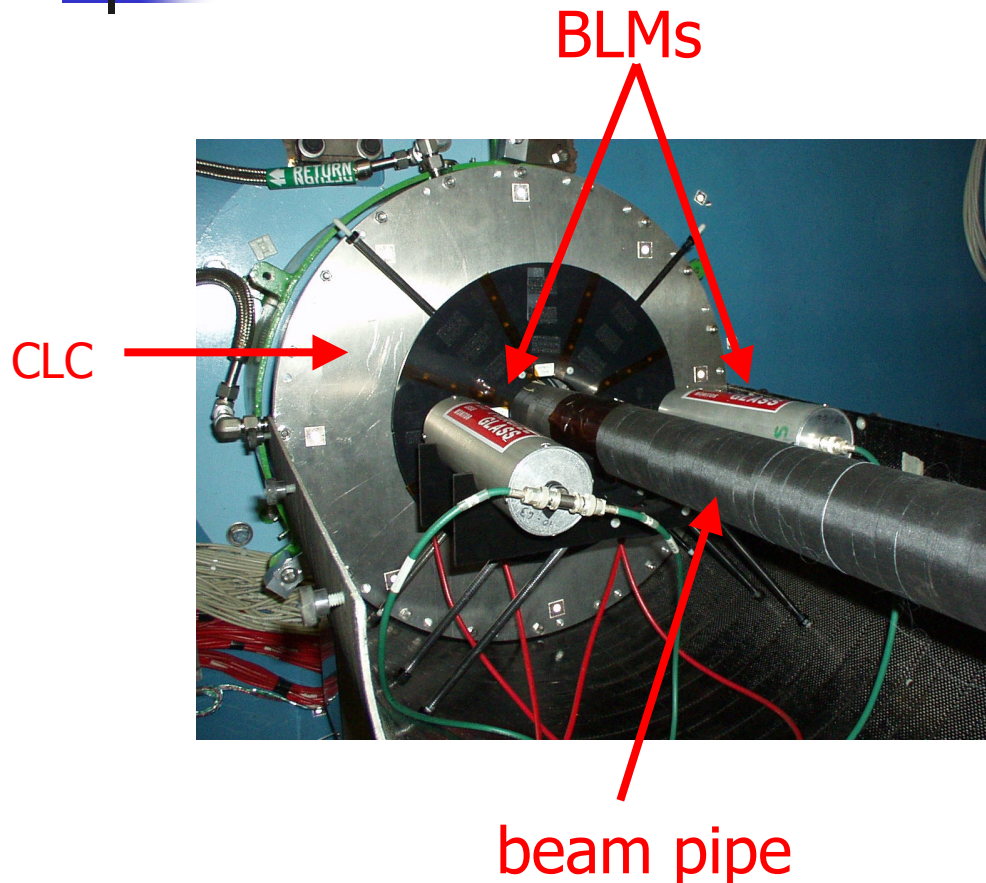


The Radiation Monitoring and Abort System

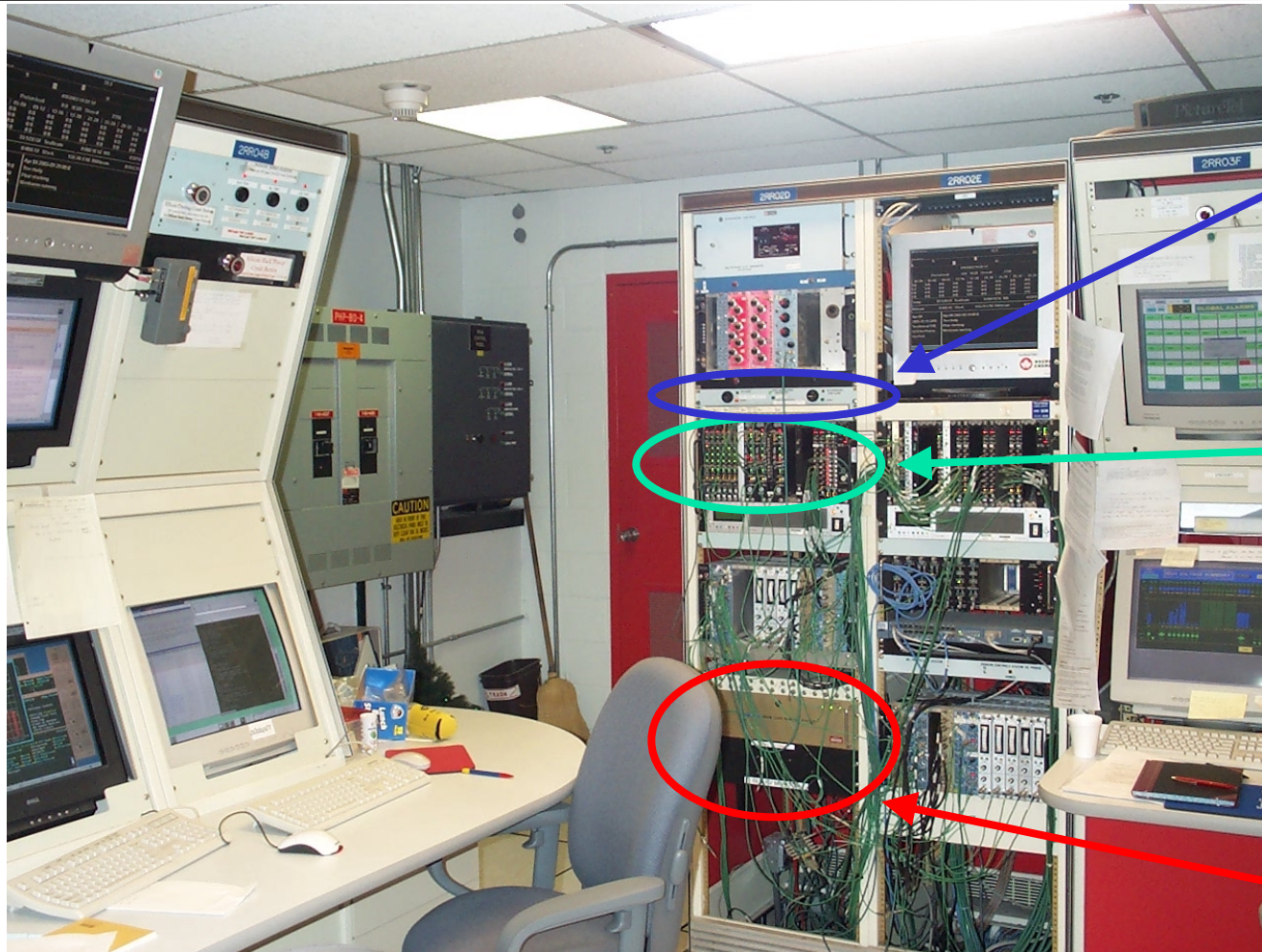
The Shift Crew's Responsibilities

The hardware



- **B**eam **L**oss **M**onitors: two on E, two on W
- Output signal prop. to dose rate
- Amplified/digitized in CAMAC in control room
- Read out via ACNET

The electronics



alarm
panel

CAMAC –
digitization
and abort
logic

HV

Every few months

Ace and/or SciCo Training



What the system does

- Compares dose rate against programmable threshold
 - If dose rate too high, abort the beam
- Compares dose integrated over past minute against programmable threshold
 - If dose too high, sound alarm
- Keeps continuous record of integrated dose

Monitoring

```
E20 SVX Rad Scaler Readout ♦Pgm_Tools♦
*Global Reset
*Plot FIFO
*Select Display Options
*Display Logged Data
Fifos Recording

Rate (R/s) Sum (Rads)
W Inner BLM 0 .0378
W Outer BLM 0 0
E Inner BLM 0 4.192
E Outer BLM 0 3.189

Messages
Welcome to the SVX Loss Monitor Page
```

- ACNET E20 shows real-time readings
- Whenever beam in TeV, you must monitor integrated doses (E:SVRAD0-3)
- Preferred method is a **Fast Time Plot**
 - Available from "SVX" menu on ACNET E-Z Writer page (E11)



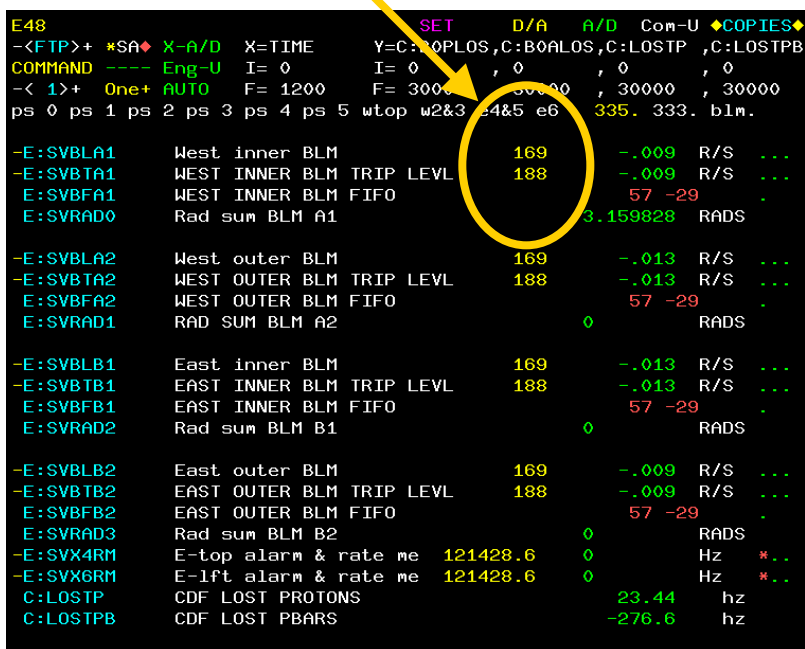
What to watch for

- Anomalous behavior of the E:SVRAD's
 - In time you'll get used to what is anomalous and what isn't
- Large integrated doses w.r.t. three thresholds:
 - "CDF manual alarm" --- SciCo calls MCR
 - "MCR manual abort" --- MCR aborts beam
 - "CDF manual abort" --- CDF aborts beam
- Integrated dose alarm will probably sound before these thresholds are reached, but be vigilant anyway!

threshold value
↓

How to manually abort the TeVatron

thresholds

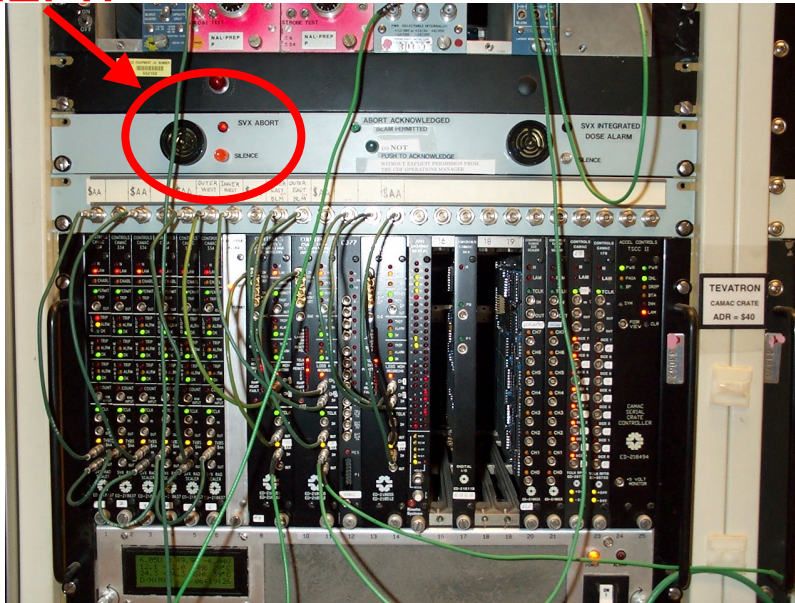


| | | | | | |
|-------------------------------|-----------------------------|----------------|----------|---------|---------|
| E48 | SET | D/A | A/D | Com-U | COPIES |
| -<FTP>+ *SA♦ X-A/D X=TIME | Y=C:LOPLOS,C:BOALOS,C:LOSTP | C:LOSTPB | | | |
| COMMAND | Eng-U | I= 0 | I= 0 | I= 0 | I= 0 |
| -< 1>+ One+ AUTO | F= 1200 | F= 3000 | F= 3000 | F= 3000 | F= 3000 |
| ps 0 ps 1 ps 2 ps 3 ps 4 ps 5 | wtop w2&3 w4&5 e6 | 335. 333. blm. | | | |
| -E:SVBLA1 | West inner BLM | 169 | -.009 | R/S | ... |
| -E:SVBTA1 | WEST INNER BLM TRIP LEVEL | 188 | -.009 | R/S | ... |
| E:SVBFA1 | WEST INNER BLM FIFO | | 57 -29 | | |
| E:SVRAD0 | Rad sum BLM A1 | | 3.159828 | RADS | |
| -E:SVBLA2 | West outer BLM | 169 | -.013 | R/S | ... |
| -E:SVBTA2 | WEST OUTER BLM TRIP LEVEL | 188 | -.013 | R/S | ... |
| E:SVBFA2 | WEST OUTER BLM FIFO | | 57 -29 | | |
| E:SVRAD1 | RAD SUM BLM A2 | | 0 | RADS | |
| -E:SVBLB1 | East inner BLM | 169 | -.013 | R/S | ... |
| -E:SVBTB1 | EAST INNER BLM TRIP LEVEL | 188 | -.013 | R/S | ... |
| E:SVBFB1 | EAST INNER BLM FIFO | | 57 -29 | | |
| E:SVRAD2 | Rad sum BLM B1 | | 0 | RADS | |
| -E:SVBLB2 | East outer BLM | 169 | -.009 | R/S | ... |
| -E:SVBTB2 | EAST OUTER BLM TRIP LEVEL | 188 | -.009 | R/S | ... |
| E:SVBFB2 | EAST OUTER BLM FIFO | | 57 -29 | | |
| E:SVRAD3 | Rad sum BLM B2 | | 0 | RADS | |
| -E:SVX4RM | E-top alarm & rate me | 121428.6 | 0 | Hz | ... |
| -E:SVX6RM | E-lft alarm & rate me | 121428.6 | 0 | Hz | ... |
| C:LOSTP | CDF LOST PROTONS | | 23.44 | hz | |
| C:LOSTPB | CDF LOST PBARS | | -276.6 | hz | |

- Step-by-step instructions on RadMon web pages
- In a nutshell:
 - Go to E48
 - Lower automated abort threshold to below pedestal
 - Let hardware take care of the rest

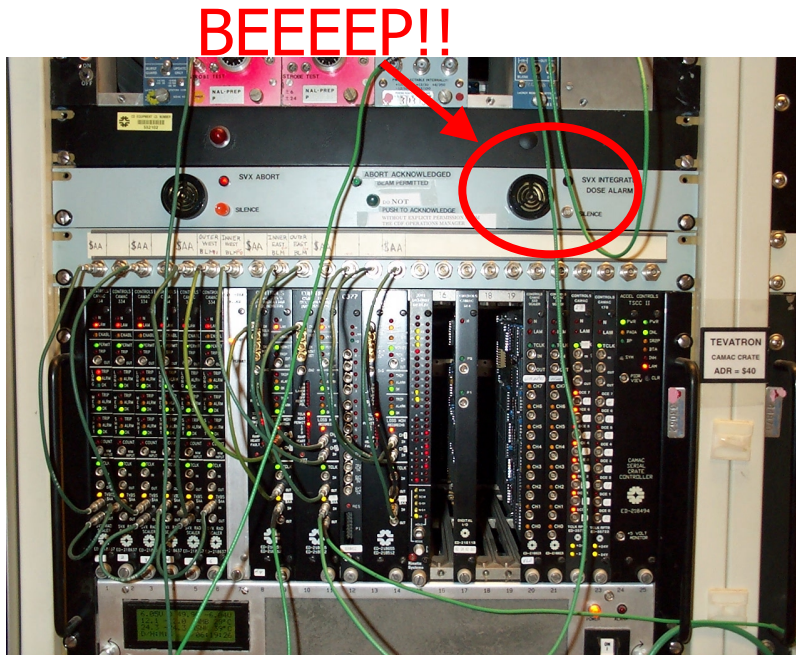
If there is an abort...

BEEEEEP!!



- Don't panic --- what's done is done
- Silence the sono-alarm
- SciCo calls MCR, RDCO, Ops Mgr
 - Probably a good idea to call silicon too
- Reset the system after Ops Mgr gives the OK
 - Step-by-step instructions on the RadMon web pages

If there is an alarm...



- Don't panic --- but be concerned
- Silence the sono-alarm
- SciCo should call MCR
 - Probably a good idea to call silicon too
- Be extra-vigilant about watching the E:SVRADs



FAQ

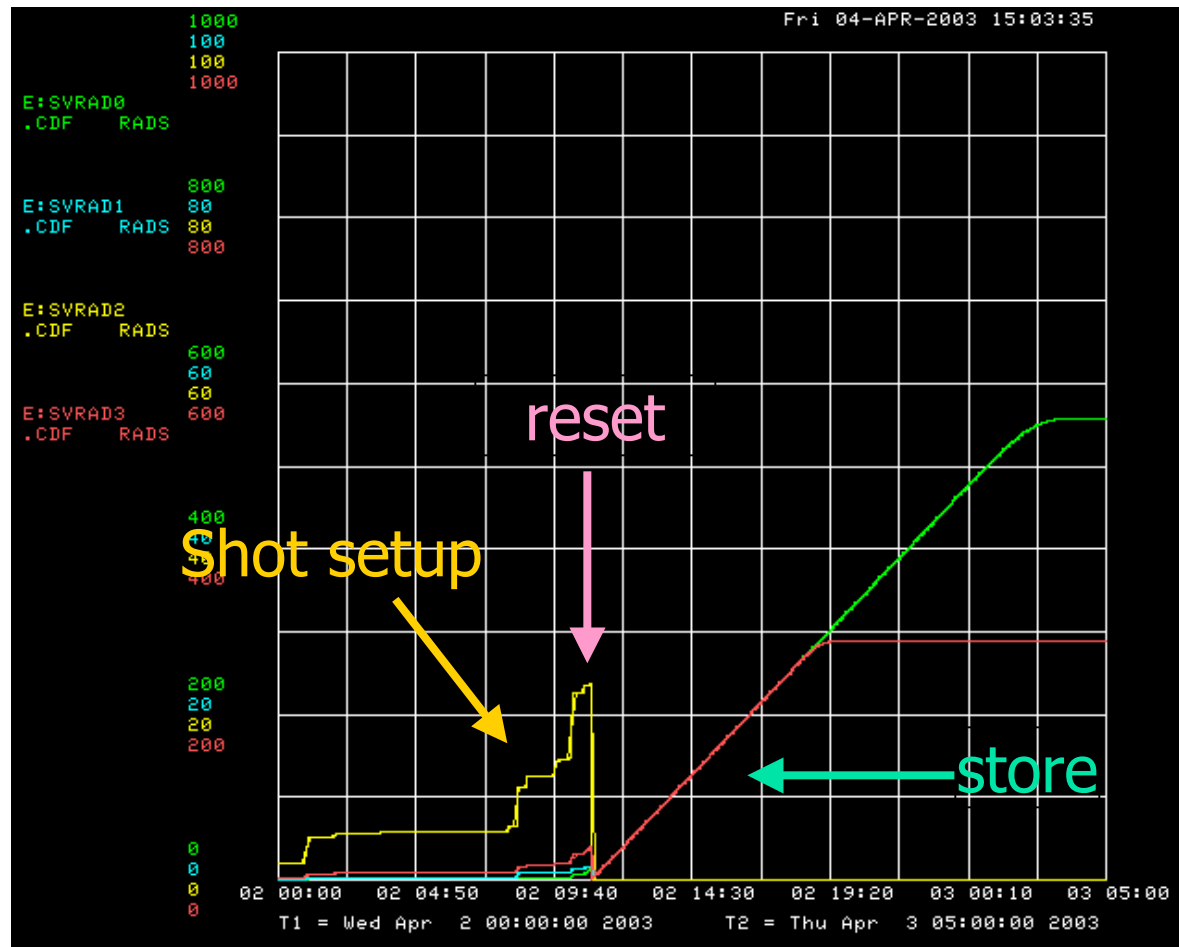
- What are the thresholds?
 - Automated abort: 12 rad/s
 - Integrated dose alarm: 18 rad in past minute
 - Manual alarm/aborts: ~krads, depends on what MCR is doing --- see table posted by ACNET console
- How long will silicon “last?”
 - ~Mrads, so don't worry.
- Has CDF ever pulled the manual abort?
 - Not on purpose.



FAQ, cont.

- When do the E:SVRADs get zeroed?
 - Before shot setup, after scraping, before studies --
- this is done by MCR
- Why are the E:SVRADs flat and boring most of the time?
 - System geared toward catastrophic beam accidents --- tens or hundreds of rad/s
 - Typical beam losses \sim mrad/s --- indistinguishable from zero --- an effective integration threshold
 - Threshold for E:SVRAD0,3 is 2 mrad/s, E:SVRAD1,2 is 8 mrad/s (long story)

Typical dose behavior



Every few months

Ace and/or SciCo Training

If you've forgotten everything I just said...

The image shows two Netscape browser windows. The left window, titled 'Monitoring Ace Information', displays a sidebar with 'Monitoring' and 'Resources' sections. A red circle highlights the link '(Fix Detectors Info/Recovery)' in the Monitoring section, with a red arrow pointing to the right window. The right window, titled 'The Silicon Radiation Monitoring and Abort System Page', shows a table of system components. A red circle highlights the 'COT HV' row in the table, with a red arrow pointing to the 'COT HV' row in the table.

Monitoring Ace Information

Don't May

Things every A

Monitoring

- Monitor Ace Checklist
- (Fix Detectors Info/Recovery)
- Monitor Ace Detectors
- Monitoring Aces Next Read
- Accelerator Network (ACNET)

Resources

- Palm Pilot resources for ACEs
- RunList via DB query tool
- Index of DAQ and calibration error log

[Shift Schedules](#)

The Silicon Radiation Monitoring and Abort System Page

[Overview of the system](#)
[Instructions for the Monitoring ACE](#)
[Using ACNET to monitor radiation](#)
[How to manually abort the Tevatron beams](#)
[How to respond to alarms and aborts](#)
[Expert contact info](#)
[A picture of Amy Grant making the devil sign](#)

Last updated on 28-FEB-2001
by [Andy Hocker](#)

| CDF iFix Slow | Controls (MCS) | ACNET - Be |
|---|---|--|
| Intro to iFix iFix Problems HV Global Page Alarm Global Page | Web-Server Pics Access Security | Tutorial Shot Setup - Re Aces' ACNET Beam Quality |
| COT HV Instructions to Shift Trip Recovery | MUONS - HV Instructions to Shift Trip Recovery | CES-CCR-6 Instructions to S Trip Recovery |
| SVX, ISL, L00 Instructions to Shift Cooling/TS Recovery Procedures Recovery Info | CSX, CSP/W B/TSU MSK | Shift Instruction |
| MNP Instructions to Shift PC restart | BSC, RPS Instructions to Shift PC restart | CLC Instructions to S |
| PC BACKUP Procedure What Remains Other Info | Not Available | Template Tutorial Instructions to S Recovery Process |



Summary

- Monitor E:SVRADs whenever beam in TeVatron
- If high doses observed, check them against manual alarm/abort threshold table and alert MCR
- Page RDCO for all alarms, aborts, or if something looks weird
 - Andy Hocker, Ricardo Eusebi, Eva Halkiadakis
- Take a spin through the RadMon web pages on one of those boring TeV studies shifts...